

Notice of Allowability

Application No.

09/938,629

Applicant(s)

YADA ET AL.

Examiner

Dipakkumar Gandhi

Art Unit

2133

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the amendment dated 9/10/2004.
2. ☒ The allowed claim(s) is/are 1-47.
3. ☒ The drawings filed on 27 August 2001 are accepted by the Examiner.
4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☒ Interview Summary (PTO-413), Paper No./Mail Date 3/31/2005.
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

ALBERT DECARO
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100

Allowable Subject Matter

1. Claims 1-47 are allowed.

2. The following is an examiner's statement of reasons for allowance:

The present invention relates to a technology for improving the number of rewrite assurances for a non-volatile memory, for example, a technology effective for application to a microcomputer with an electrically erasable and programmable flash memory built therein.

The claimed invention (claim 2 as representative) recites features such as: "...the central processing unit executes a predetermined process to thereby generate error correcting information and add the same to data to be written only for a specified partial storage area of the non-volatile memory and allow an error decision and an error correction based on the error correcting information to be effected on the data read from the specified partial storage area."

The prior arts of record teach that a data storage system includes a storage medium divided into storage areas, and multiple read/write probes each of which performs access operations to read and write data in a respective storage area of the storage medium (Saito et al. US 6,000,021 is an example of such prior arts). The prior arts of record also teach error correcting code (ECC) strategies used to recover data that may have been corrupted. The ECC encoder encodes the data block with error correction data (Weng et al. US 5,428,630 is an example of such prior arts). The prior arts, however, do not teach that only a specified partial storage area of the non-volatile memory is intended for a software ECC process. Since ECC codes are added to the partial storage area alone and an error correction is made thereto to thereby increase the number of rewrite assurances, substantially needless waste of each storage area by ECC codes can be avoided as compared with a configuration in which the ECC codes are added to all the write data without distinction regardless of the storage areas. Hence the prior arts of record do not anticipate nor render obvious the claimed inventions. Thus, claims 1-47 are allowable over the prior arts of record.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

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EXAMINER'S AMENDMENT

3. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with the applicant's attorney Mitchell W. Shapiro on 3/31/2005.

The application has been amended as follows: In line 9 of the abstract, "ECC codes can b avoided" is corrected to -ECC codes can be avoided-. The corrected abstract is attached.


4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dipakkumar Gandhi whose telephone number is 571-272-3822. The examiner can normally be reached on 8:30 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Albert Decady can be reached on (571) 272-3819. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Dipakkumar Gandhi
Patent Examiner



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